

ABSTRACT

A method and apparatus is provided for allocating bandwidth and reducing jitter in an upstream transmission in a shared-media packet-switched access network with multiple upstream channels offering integrated Internet Protocol voice and high-speed data services. To allow multiple simultaneous CBR (constant-bit-rate) voice connections to be supported by a cable modem, when only a single channel can be accessed at a time, a method to select an upstream channel and assign to each connection a time slot in the upstream channel is provided. Jitter, i.e. packet delay variation, results when packets associated with a voice connection are not received at expected intervals. To maintain jitter within predetermined tolerances, the sequence of mini-slots in an upstream channel is divided into frames. Each frame will have a sequence of voice and data-only regions, and the voice region is divided into non-overlapping jitter windows of generally equal length. Even when an upstream channel change is required, each active voice connection is maintained in one of the jitter windows, thereby limiting jitter to the duration of a jitter window.